

In the Drawings

Applicants submit herewith 3 sheets of formal replacement drawings, appended hereto after page 12 of this Amendment.

REMARKS

The Office Action mailed April 6, 2005, has been received and reviewed. Claims 1 through 20 are currently pending in the application. Claims 1 through 20 stand rejected. Claims 21-29 are withdrawn, although not indicated as pending by the Examiner. Applicants have amended claims 1 through 16 and 19, cancelled claims 17, 18, and 20-29, and respectfully request reconsideration of the application as presently amended.

35 U.S.C. § 102(b) Anticipation Rejections

Anticipation Rejection Based on U.S. Patent No. 5,677,566 to King et al.

Claims 1, 2, 5 through 9, and 13 through 20 stand rejected under 35 U.S.C. § 102(b) as being anticipated by King et al. (U.S. Patent No. 5,677,566). Applicants respectfully traverse this rejection, as hereinafter set forth.

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Brothers v. Union Oil Co. of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). The identical invention must be shown in as complete detail as is contained in the claim. *Richardson v. Suzuki Motor Co.*, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

Regarding independent claim 1, Applicants assert that King et al. do not describe each and every element set forth in claim 1 as currently amended. Independent claim 1 has been amended herein to recite an intermediate structure in the fabrication of a chip-scale package that is *free of encapsulant material* and that includes, *inter alia*, a carrier bond directly attached to an upper surface of the conductive lead frame member that is non-conductively attached to a portion of the active surface of a semiconductor die. Furthermore, the intermediate structures are configured to be encapsulated with encapsulant material as further recited in claim 1.

As noted at page 9, lines 4 through 14, in the as-filed specification “[u]nlike the prior art, the carrier bonds 50 of the present invention are positioned prior to the encapsulation of the CSP 100. Positioning the carrier bonds 50 prior to encapsulation allows the carrier bonds 50 to be attached at any point along the conductive trace 20, thus providing a greater variety of possible patterns for the carrier bonds 50. This is an advantage over the prior art lead configuration ...,”

because the CSPs of the prior art are limited to using the surfaces of the leads 220 which remain exposed after encapsulation. Likewise, encapsulation of the carrier bonds 50 reinforces and supports the attachment between the carrier bonds 50 and the conductive trace 20. In addition, encapsulation of the entire conductive track 20 helps to prevent unwanted shorts within the CSP 100 caused by inadvertent conductive connections between the exposed leads 220 of the prior art and a carrier substrate 900.”

King et al. do not describe, teach, or suggest an intermediate structure that is free of encapsulant material and that includes a carrier bond directly attached to a conductive lead frame member. In contrast, King et al. teach encapsulation of an intermediate assembly *prior to* providing any carrier bonds on conductive lead frame members, as illustrated in FIG. 7 therein. As described by King et al., “[t]he encapsulating material 26 is formed with openings 30 to expose conductive leads 12 at electrode bond area 34. Openings 30 are sized and shaped according to the size and shape of solder balls 38, which form the external electrodes.... Referring to FIG. 8, solder balls 38 are bonded to electrode bond area 34 of conductive leads 12, which are exposed through openings 30.” *King et al.*, column 4, lines 36-41; column 4, lines 49-51.

Applicants respectfully assert that King et al. do not describe an intermediate structure in the fabrication of a chip-scale package as recited in claim 1 as currently amended and respectfully request reconsideration and allowance thereof.

Regarding independent claim 2, Applicants assert that King et al. do not describe each and every element set forth in claim 2 as currently amended. Independent claim 2 has been amended herein to include elements and limitations substantially similar to those of claim 1 as currently amended and previously discussed herein. Applicants therefore respectfully request reconsideration and allowance of claim 2 as currently amended for the same reasons set forth above with respect to independent claim 1.

Furthermore, Applicants respectfully assert that each of dependent claims 5 through 9, 13 through 16, and 19 is allowable since each depends directly or indirectly from claim 2, which is allowable for the reasons previously discussed.

Regarding claim 14, Applicants respectfully assert that King et al. do not describe carrier

bonds that comprise a conductive or conductor-filled polymer, as recited therein.

35 U.S.C. § 103(a) Obviousness Rejections

Obviousness Rejection Based on U.S. Patent No. 5,677,566 to King et al. as applied to claims 2 and 9 above and further in view of U.S. Patent No. 5,894,107 to Lee et al.

Claims 3, 4 and 10 through 12 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over King et al. (U.S. Patent No. 5,677,566) in view of Lee et al. (U.S. Patent No. 5,894,107). Applicants respectfully traverse this rejection, as hereinafter set forth.

M.P.E.P. 706.02(j) sets forth the standard for a Section 103(a) rejection:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings. Second, there must be a reasonable expectation of success. Finally, **the prior art reference (or references when combined) must teach or suggest all the claim limitations.** The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). (Emphasis added).

Applicants have amended independent claim 2, from which each of claims 3, 4 and 10 through 12 depends either directly or indirectly. Applicants assert that none of claims 3, 4 and 10 through 12 is obvious under 35 U.S.C. § 103(a) because the cited references do not teach or suggest teach or suggest all the claim limitations found in independent claim 2, as currently amended.

As previously discussed, King et al. do not describe, teach, or suggest an intermediate structure in the fabrication of a chip-scale package that is free of encapsulant material and that includes a carrier bond directly attached to a conductive lead frame member. Furthermore, Lee et al. do not describe, teach, or suggest an intermediate structure in the fabrication of a chip-scale package that is free of encapsulant material and that includes a carrier bond directly attached to a conductive lead frame member. In contrast, Lee et al. teach encapsulating a chip and lead frame assembly and *subsequently* providing a plurality of carrier bonds in the form of solder balls 16 on exposed upper surfaces of external connection means 34. *Lee et al.*, column 5, lines 20-29, and

39-43; FIGS. 11-12.

Applicants therefore assert that the cited references do not teach or suggest all the claim limitations of independent claim 2 as currently amended, from which each of claims 3, 4, and 10 through 12 depends either directly or indirectly. The nonobviousness of independent claim 2 precludes a rejection of each of claims 3, 4, and 10 through 12, which depend therefrom, because a dependent claim is obvious only if the independent claim from which it depends is obvious. See *In re Fine*, 5 U.S.P.Q.2d 1596, 1600 (Fed. Cir. 1988), see also MPEP § 2143.03. Therefore, Applicants respectfully request that the Examiner withdraw the 35 U.S.C. § 103(a) obviousness rejection of claims 3, 4, and 10 through 12.

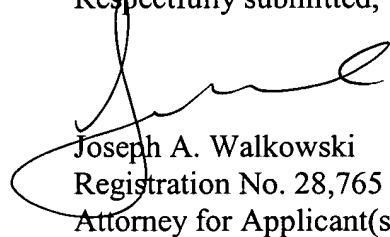
ENTRY OF AMENDMENTS

The amendments to claims 1 through 16 and 19 above should be entered by the Examiner because the amendments are supported by the as-filed specification and drawings and do not add any new matter to the application. Further, the amendments do not raise new issues or require a further search.

CONCLUSION

Claims 1 through 16 and 19 are believed to be in condition for allowance, and an early notice thereof is respectfully solicited. Should the Examiner determine that additional issues remain which might be resolved by a telephone conference, he is respectfully invited to contact Applicants' undersigned attorney.

Respectfully submitted,



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